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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,111	05/10/2001	Salman Akram	MIC-0012-D1-US (97-0141)	7172

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EXAMINER

CHAMBLISS, ALONZO

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/853,111

Applicant(s)

SALMAN AKRAM

Examiner

Alonzo Chambliss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-22 and 32-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-22 and 32-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

1. The letter filed on 3/12/03 in response to non-responsive amendment requirement filed on 2/26/03 in Paper No. 11 has been fully considered and the non-responsive requirement is withdrawn. Therefore, this office action is made final.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 15-22 and 32-35 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined

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under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 15-22 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sota (U.S. 5,646,829).

With respect to Claims 15 and 21, Sota teaches stacking at least two semiconductor dies 1 having substantially the same rectangular dimensions on top of one another by die pad 2 such that one of the dies 1 is mounted on top of the lead frame fingers 3 and the other of the dies 1 is mounted on the die 1 mounted on the lead frame fingers 3 (see Figs. 3b – 3e). Each of the semiconductor dies 1 is wire bonding to the same lead frame fingers 3 (see Figs. 3c – 3e).

With respect to Claim 16, Sota teaches wherein one of the semiconductor dies 1 is mounted back to back on the other of the semiconductor dies 1 (see Figs. 3c-3e).

With respect to Claim 17, Sota teaches wherein one of the semiconductor dies 1 is adhered to the other of semiconductor dies by an adhesive layer by die bonding agent made of polyimide resin that is heating to form adhesion with the semiconductor dies 1 (see col. 5 lines 5-35).

With respect to Claim 18, Sota teaches wherein a first semiconductor die has a lead-on-chip configuration (see Figs. 3b- 3e).

With respect to Claim 19, Sota teaches wherein one of the dies 1 is secured to the lead frame and the other of the dies is secured to the die 1 by die pad 2 so that the die is secured to the lead frame (see Figs. 3b – 3e).

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With respect to Claim 20, Sota teaches wire bonding the semiconductor dies 1 to the lead frame, wherein the dies 1 have facing sides and outwardly facing sides by extending wire to bond pads on the outwardly facing sides of the dies 1 (see Figs. 3c- 3e).

With respect to Claim 22, Sota teaches encapsulating the semiconductor dies 1 and the lead frame in a single package body 7 (see Figs. 3d and 3e).

5. Claims 32, 34, and 35 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Ball (U.S. 5,917,242).

With respect to Claim 32, Ball discloses stacking first and second semiconductor dies 102, 104 having substantially the same rectangular dimensions on top of one another. The first semiconductor die 102 is mounted on a lead frame finger 130, 140 while the second semiconductor die 104 is mounted only on the first semiconductor die 102. Electrically connecting bonding pads 116, 128 on each of the semiconductor dice 102, 104 to the same lead fingers 130,140 of the lead frame 120. The second semiconductor die 104 has bonding pads 116 electrically connected to lead fingers 130, 140 by lead fingers 118 (see Fig. 3).

With respect to Claim 34, Ball teaches wherein the first semiconductor die 102 is mounted back to back on the second semiconductor die 104 (see Fig. 3).

With respect to Claim 35, Ball teaches wherein the first semiconductor die 102 is adhered to the second semiconductor die 104 by an adhesive layer 110 (see col. 7 lines 1-8; Fig. 3).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ball (U.S. 5,917,242).

With respect to Claim 33, Ball does not explicitly show in Fig. 3 wire bonding the first and second semiconductor dies to the lead frame. However, from Fig. 3 one can see that another die 142 is wire bonded and TAB bonded to the lead frame 120. Thus, the wire bonding of die 142 to the lead frame provides an additional electrical connection between the two elements. Therefore, one skilled in the art at the time of the invention would readily recognize wire bonding the second die to the lead frame when the second die is attached to the first die, since the wire bonding of the second die would provide an additional electrical connection between the second die and the lead frame while increasing the number of signals between the second die and an external device.

The prior art made of record and not relied upon is cited primarily to show the process of the instant invention.

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***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

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**AC**/July 1, 2003

A handwritten signature in cursive script, appearing to read "Alonzo Chambliss".

Alonzo Chambliss  
Patent Examiner  
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